SCIENTIFIC LITERATURE

Case Report

Special Issue Article "Arrhythmias"

Intermittent LBBB and PR Interval Prolongation Late After Trans-Catheter Aortic Valve Replacement: A Red Herring or a Cause of Concern?

Nagesh Chopra^{*}, Eugene Y Fu, Anish K Amin and Sreedhar R Billakanty

Department of Cardiology, Riverside Methodist Hospital, USA

ARTICLE INFO

ABSTRACT

Received Date: April 09, 2019 Accepted Date: April 20, 2019 Published Date: April 26, 2019

KEYWORDS

Arrhythmias Left Bundle Branch Block TAVR ECGS

Copyright: © 2019 Nagesh Chopra et al., Journal of Case Reports: Clinical & Medical. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation for this article: Nagesh Chopra, Eugene Y Fu, Anish K Amin and Sreedhar R Billakanty. Intermittent LBBB and PR Interval Prolongation Late After Trans-Catheter Aortic Valve Replacement: A Red Herring or a Cause of Concern?. Journal of Case Reports: Clinical & Medical. 2019; 2(2):131

Corresponding author:

Nagesh Chopra,

Department of Cardiology, Riverside Methodist Hospital, 3535 Olentangy River Road, Columbus, Oh 43214, USA. Phone: 614 202 9480; Fax: 614 566 6837;

Email: nagesh.chopra@ohiohealth.com

Trans-Catheter Aortic Valve Replacement (TAVR) has become mainstream treatment for severe symptomatic aortic stenosis. However, Atrio-ventricular conduction abnormalities like heart block and Left Bundle Branch Block (LBBB) are frequently encountered post-TAVR. A subset of patients who develop LBBB exhibit intermittent LBBB the significance of which is largely, unknown. We present a case of intermittent LBBB and pr prolongation occurring very late after TAVR to invigorate the debate about this clinical entity and its potential clinical implication.

CASE PRESENTATION

A 79-year-old male underwent two sequential 12-lead ECGS one year after a Trans-Catheter Aortic Valve Replacement (TAVR). The first ECG showed heart rate of 85/min, pr interval of 186ms and a Left Bundle Branch Block (LBBB) with a QRS duration of 150ms (Figure 1A). The subsequent ECG taken 7 minutes later at heart rate of 83/min showed a PR interval of 144ms, and a normal QRS of 102ms (Figure 1b). At the time of evaluation he had normal electrolytes and no evidence of acute coronary syndrome.



depicts the first ECG at a heart rate 85/min, with mildly prolonged PR and a LBBB (inset). Panel B depicts a subsequent ECG taken 7 minutes later at a heart rate of 83/min with normalization of PR interval and QRS to pre-TAVR baseline (inset).





Journal of Case Reports: Clinical & Medical



Previously, he had undergone a successful TAVR with a 31mm self-expanding Medtronic core-valve one year ago for severe symptomatic aortic stenosis with LVEF of 60%. His preprocedure pr interval was 166ms and QRS duration was 96ms. Post-TAVR he developed persistent LBBB. a An electrophysiological evaluation revealed no indication for permanent pacing. Since then a number of ECGS have shown a LBBB, although in hindsight he likely has intermittent LBBB. The patient has done well, and continues to be monitored for signs and symptoms of heart block.

LBBB after TAVR with Medtronic core-valve occurs in 38-50%of patients. A subset of them exhibit intermittent LBBB which is ~24% in our unpublished data consistent with previously published data [1]. It is especially common immediately after TAVR suggesting 'settling' of the valve. However, transient normalization of LBBB 1 year after TAVR without an obvious cause, strongly suggests continued micro-movement of the prosthesis and its impingement on the cardiac conduction system (the left bundle with occurrence of LBBB and possibly AV node with PR interval prolongation) with potentially severe consequences. In this context, we have reported 2 cases of complete heart block which can occur even without preceding LBBB, occurring more than 1 year after TAVR requiring permanent pacing [2].

CONCLUSION

Post-TAVR sudden cardiac death risk is 5.6% with the underlying mechanisms likely being ventricular arrhythmias and complete heart block putatively caused from cardiac conduction system impingement [2]. These late post-TAVR ECG findings in our patient strongly suggest continued micromovement of the valve well after its endothelialization [3] predisposing patients to complete heart block. There are currently no established guidelines how to risk stratify these patients. Further research needs to be done; however, it is possible that patients who exhibit intermittent LBBB remain at a higher risk for developing complete heart block.

ACKNOWLEDGEMENT: None

CONFLICT OF INTEREST: None

REFERENCES

- Poels TT, Houthuizen P, Van Garsse LA, Maessen JG, de Jaegere P, et al. (2014). Transcatheter aortic valve implantation-induced left bundle branch block: causes and consequences. J Cardiovasc Transl Res. 7: 395-405.
- Chopra N, Tong MS, Yakubov SJ. (2018). Very late occurrence of complete heart block without preexisting Atrio ventricular conduction abnormalities: A rare complication after Trans aortic Valvular Replacement. Heart Rhythm Case Rep. 4: 77-81.
- Noble S, Asgar A, Cartier R, Virmani R, Bonan R. (2009). Anatomo-pathological analysis after CoreValve Revalving system implantation. EuroIntervention. 5: 78-85.